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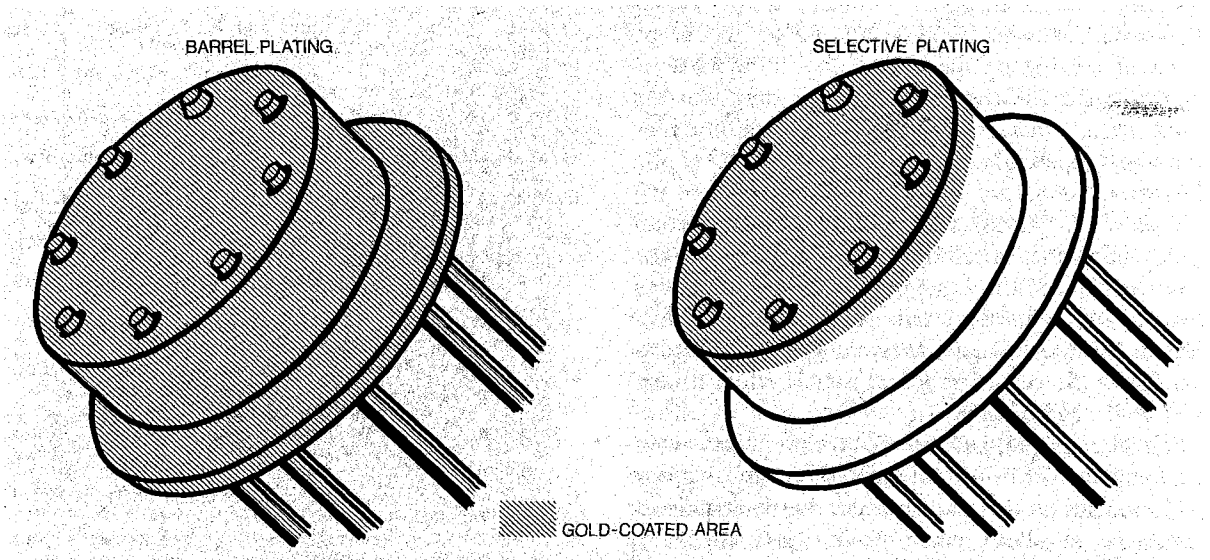
Automatic Selective Brush Plating of Gold

APPLICATION TO TRANSISTOR AND INTEGRATED CIRCUIT HEADERS

The selective gold plating of intricately shaped articles presents difficulties and for many years transistor headers were barrel-plated despite the fact that gold was needed only on those areas where wire or wafer bonding was required. The restriction of gold plating essentially to these areas is made possible, however, using equipment which has been developed by the Auric Corporation of Newark, NJ., (*U.S.Patents* 3,951,772 and 4,048,043).

In this, the headers are carried on a stainless steel band with the surface to be plated at a fixed height above a moving felt belt which is kept impregnated with electrolyte from the gold plating bath through which it passes. A copper brush serves as the cathode and platinum mesh as the anode. A proprietary electrolyte (Auric 609), which is a neutral gold bath containing citrates and phosphates, or its equivalent, is recommended for use with the equipment, which can be adapted to plate most types of headers. These are fed into the machine after cleaning by normal procedures and drying, and after plating are unloaded automatically into a container of distilled water. They are then rinsed and dried.

Depending on the design of the units and the gold thickness desired, the equipment will plate 8 000 to 14 000 headers per hour at an energy consumption which is a fraction of that in barrel-plating. The resulting gold coatings have been found to give higher bonding yields than those produced by barrel-plating, and the equipment is approved for use by six major semiconductor manufacturers.



Schematic representation of the results of barrel-plating and selective brush plating transistor headers with gold